

Climate change beliefs and savings behavior: a macroeconomic perspective

Hannah Römer

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University of Oxford

Motivation: Anticipation of climate change impacts

Climate change is projected to incur large damages to the global economy.

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1. Does concern over climate change affect individual savings?
2. What are the macroeconomic implications of climate concern via capital accumulation?
3. Does **disagreement** over climate impacts matter?

Consumption-savings model: adjustment to perturbation in aggregate productivity process

- focus on partial equilibrium for analytical insights: aggregate capital exogenous

Consumption-savings model: adjustment to perturbation in aggregate productivity process

- Today's response in savings rate to increased probability of low state at any future point ≥ 0
- Relevance of idiosyncratic state
 - Marginal propensity to save
 - Expected marginal value of savings in low vs high state
- Largest response for poor low-income agents who save

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Empirical evidence: data on climate beliefs and savings in 2 waves of UK panel survey

- Significant positive correlation between climate change concern index and savings choices
- Particularly driven by
 - extensive margin
 - low income individuals

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Aggregation of micro adjustments → macro effects?

DSGE framework: extended Krusell-Smith model

1. **Non-stationarity**: time dependent shift in aggregate variable
2. Individual **beliefs** over **impact of trend** on stochastic productivity process

Climate change interpretation

- Rising global temperature \uparrow probability of low productivity state
- Exogenous and **slow** shift

DSGE framework: extended Krusell-Smith model

- Average beliefs matter for aggregate outcomes along the transition:
 - Climate concern effect on capital partly offsets exogenous physical damages
 - Transmission via wages: labor income \uparrow if capital higher, wealth inequality \downarrow

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- Average beliefs matter for aggregate outcomes along the transition:
 - **Climate concern effect** on capital partly offsets exogenous physical damages
 - Transmission via **wages**: labor income \uparrow if capital higher, wealth inequality \downarrow
- Heterogeneous effects of disagreement across wealth distribution
 - Effect on unconcerned in polarized economy
 - drop in interest rate: decreases asset returns, disincentivizes savings further (dominates for rich)
 - rise in wages: increases labor income (dominates for poor)
 - Comparison to analytical results in partial equilibrium:
 - Large effect of individual belief on savings **choice** of poor. But: **limited ability to self-insure**
 - General equilibrium effects dominate welfare outcomes, driven by higher savings of the rich
 - positive externality of savings

Climate change impacts on the macroeconomy

- Stochastic damages: Golosov et al. (2014), Cai and Lontzek (2019)
- Anticipation: Bilal and Rossi-Hansberg (2023), Hong et al. (2023), Bakkensen and Barrage (2022)

Contribution: joint focus on individual choices and uncertainty

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Disagreement over aggregate (climate) processes

- Bakkensen et al. (2023), Chen et al. (2012), Lontzek et al. (2024)

Contribution: connection to idiosyncratic state, simulated impacts along the transition path

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Heterogeneous agents and aggregate risks

- Krusell and Smith (1998), Broer et al. (2022)

Contribution: Non-stationarity, novel solution method for perceived law of motion

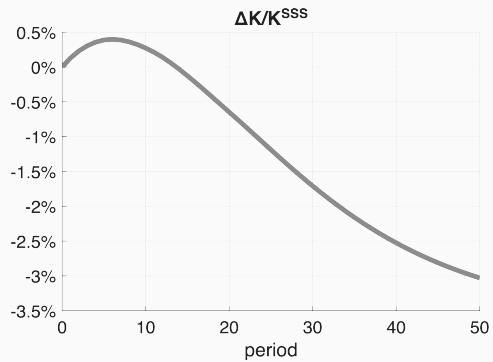
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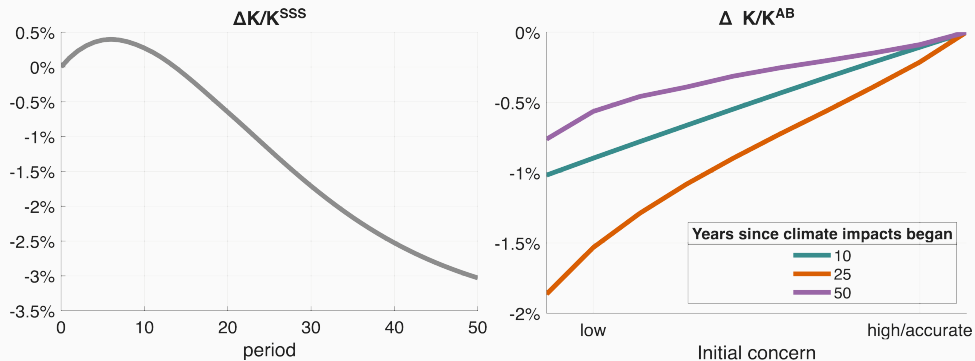
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